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RUSHES, SEDGES AND REEDS

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How do botanists distinguish between Rushes, Sedges and Reeds? When this question was put to me recently I must confess I was not too sure of my answer, so hastily proceeded to research the topic. My search revealed some interesting data on these vernaculars and on the plants to which they are applied.

The name Rush comes from the Old English *risc*, a West Germanic word, from an Indo-European base meaning to bind, or plait (Grigson, 1974). The name is applied to plants of the family Juncaceae, having straight naked "stems" or stalks (properly leaves) and growing in marshy ground or on borders of ponds and rivers, or in estuarine marshes. It denotes various species of *Juncus*, and is also applied to many plants of different genera more or less resembling *Juncus* (Shorter Oxford Dictionary, 1973: A New English Dictionary, 1914).

The name Sedge comes from the Old English word *segg*, German *segge*, from an Indo-European base *seq*—'to cut', meaning plants with a sharp or serrate leaf or stem edge which cuts the hand when the foliage is grasped. In folk-lore the name is applied to various narrow-leaved plants growing in wet places. It was also given to certain broad-leaved species such as the Sweet Flag (*Acorus calamus*) and to the Wild Iris (*Iris pseudo-corus*), but these species are better called Flags. Botanists apply the name Sedge to plants of the genus *Carex* and to some other genera of the family Cyperaceae, e.g. *Cladium*.

The name Reed comes down to us from the Old English *hreed*, derived from the West Germanic languages. It is the first element of many names of stream or riverside places such as the (Wiltshire) Rodbourne, 'reed stream'. Also in folk-lore, the name of the tall straight stalks or stems of the genera *Phragmites*, *Arundo*, and certain other plants of marshy places.

Scholars since ancient times have written works describing plant species, often in regard to their herbal or other value to mankind. These descriptions included various ways of notation of a name for a species, and a description of its foliage and flowers. It was not until the eighteenth century that botanists and zoologists developed and used consistently the binomial system of nomenclature whereby a plant or animal was given a generic and specific name.

The vernacular names of plants were commonly recorded by botanists along with their descriptions of species, thus preserving the nomenclature of the layman with that of science. For example, some species of the sedge genus *Cyperus* have vernaculars such as Papyrus (*C. papyrus*), from the classical latin name for this species: Galingale (*C. longus*), a common name used in England since the sixteenth century; and Nut Grass (*C. rotundus*). However, the vernacular, Brown Cyperus (*C. fuscus*) is simply a translation of the Linnaean name for this species.

The relationship of the vernaculars Rushes, Sedges and Reeds to plant taxonomy is broadly as follows: Rushes (Juncaceae and Restionaceae, and some Cyperaceae), Bulrushes (Typhaceae), Flowering Rushes (Buto-

maceae), Sedges (Cyperaceae), and Reeds (*Phragmites* and *Aruundo* in the Poaceae (= Gramineae) and some species of *Cyperus* and *Scirpus* in the Cyperaceae).

RUSHES

The family Juncaceae (Tussock Rushes) comprises 9 genera and about 400 species most of which inhabit the temperate regions of the southern hemisphere. The genus *Juncus* is world-wide but most of its species occur in the northern Hemisphere.

In Britain and Europe many of the former uses for rushes have died out. The foliage of species of *Juncus* and *Scirpus* was woven to make bags, saddles, beehives and other commodities. The pith of some species was used for rush lights before the introduction of candles. The Chair-maker's Rush (*Scirpus americanus*) is still woven to make rush-bottomed chair seats. In the Middle Ages rushes were strewn on the floors of dwellings instead of carpets. Edlin (1951) gives an attractive account of the many uses made of rushes, sedges, reeds and grasses in Great Britain.

Two genera of this family are native in South-Western Australia, *Luzula meridionalis* (Field Woodrush) and about 13 species of *Juncus*. The Giant Rush (*J. pallidus*) is a common and conspicuous species, growing along creek banks and in marshy hollows where it forms large clumps with foliage up to 2 m. Another rush which occurs in extensive communities along the banks of our rivers and in estuarine salt-marshes is the Shore Rush (*J. maritimus*), although most of the populations of this rush are in fact the closely allied species *J. kraussi*. Other examples of attractive and common rushes in South-Western Australia are the Jointed Leaf Rush (*J. holoschoenus*) and the Toad Rush (*J. bufonius*).

The other large family of rushes is the Restionaceae, comprising some 28 genera and 320 species, mostly occurring in South Africa and Australia, with a few species in New Zealand, Chile and Indochina (Willis, 1966).

In Western Australia there are some 15 genera and 60 species, but as the Australian taxa are presently under revision the above estimates are now tentative. Only 5 of these genera have vernaculars, notably *Restio* (Cord Rushes), *Lepyrodia* (Scale Rushes), *Leptocarpus* (Twine Rushes), *Lepidobolus* (Chaff Rushes) and *Hypolaena* (Rope Rushes). Apparently this family has not much stimulated wildflower enthusiasts nor botanists to coin common names, despite the considerable diversity found in the foliage and flowering scapes of the numerous species. Perhaps the current upsurge in cultivation and propagation of native plants in Australian gardens will lead to giving many species common names. Certainly many of our Restionaceae when in flower are attractive plants, and some species have great potential as foliar foil for brightly coloured flowers in floral arrangements.

Another family of rushes is the Typhaceae, with a single cosmopolitan genus, *Typha*, comprising about 10 species inhabiting marshy and inundated soils of temperate and tropical regions.

Typha is commonly known as the Bulrush, particularly in Australia, but elsewhere it is also called the Cattail or Reedmace. In South-Western Australia the Aborigines called it Yanget, hence the place names Yangebup, Yanget Pool, Yangettee farm (at Coolup) and Yanchep. In eastern Australia it is also called by the Aboriginal name Cumbungi. The Bulrush is readily recognisable by its tall strap-like leaves and its cylindrical inflorescence of densely packed, minute brown flowers on a tall stalk.

Bentham (1878) cites the Australian species of *Typha* as *T. angustifolia*, but a recent revision of the Australian taxa (Briggs and Johnson, 1968) distinguishes three species, *T. domingensis* (Narrow-leaf Cumbungi) and *T. orientalis* (Broad-leaf Cumbungi) both native to Australia, and the exotic *T. latifolia* naturalised in a few localities in eastern Australia.

In Western Australia, *T. domingensis* occurs mostly in the Northern Province where it inhabits permanent pools of the seasonally flowing

rivers or marshy sites. On the other hand, *T. orientalis* occurs in the South-Western Province where it inhabits fens, swamps and sheltered embayments of rivers. This species is a conspicuous element of the lakes of the Swan Coastal Plain such as Lake Claremont (Butler's Swamp), White Lake, Herdsman Lake, and Loch McNess at Yanchep.

Both *T. orientalis* and *T. domingensis* commonly invade irrigation systems in eastern Australia, obstructing water flow or preventing access to water, and must be controlled by herbicides. Otherwise the Bulrush has the merit of providing shelter and food for waterfowl and other wildlife in natural lakes and fens (Sainty and Brayne, 1973).

The Butomaceae or Flowering Rush family originally comprised 6 genera distributed in Eurasia and tropical America. The American genera have been removed to the family Limncharitaceae leaving the monospecific *Butomus umbellatus* of temperate Eurasia. There is no evidence of *Butomus* being naturalised in Western Australia.

The name Rush is also applied specifically to the genus *Lomandra* (Mat Rushes) of the family Xanthorrhoeaceae, with some 46 species distributed in Australia, New Caledonia and New Guinea.

The species are perennial herbs mostly with radical tufts of narrow caespitose leaves from an underground rhizome. Some species thus occur in low thickets with much spreading, tangled foliage—a habit which evidently suggested the vernacular name.

Notable examples of the 21 species occurring in Western Australia are *Lomandra purpurea* (Purple Mat Rush) with dark purple inflorescences, and the sweet-scented *Lomandra odora* (Fragrant Mat Rush).

Two of the western species are exceptional in their stature. *Lomandra hastilis* has stout, short stems appearing above ground from the rhizome, and bearing dense tufts of flat leathery leaves up to 130 cm long and 12 mm broad. The flowering spike may reach a height of 120 cm. Similarly, *Lomandra ordii* forms dense thickets of foliage, on stout, erect stems with leaves up to 150 cm long and 10-20 mm broad. The paniculate flowering scape reaches up to a height of 150 cm. Oddly enough, these two species lack vernaculars, probably because they are not well known to wildflower observers, as each has a very limited distribution in southwestern Australia.

I suppose we might appropriately call *L. hastilis* the Spear-fruited Mat Rush since its tall fruiting scape suggests a spear. *L. ordii* could be called Ord's Mat Rush as Baron von Mueller named this species in honour of Sir Harry St. George Ord (1819-1885), a former Governor of Western Australia.

SEDGES

The Cyperaceae or Sedge family is a large cosmopolitan one of some 90 genera and about 4,000 species. One of the classical examples of this family is the Papyrus or Paper Reed or Egyptian Bulrush (*Cyperus papyrus*). Yet, because of its cane-like flowering stalks it is called a Reed! However many of the species of *Cyperus* are called Sedges of one kind or another.

The genus *Cyperus* has for many years featured in horticulture mainly in the cultivation of the ornamentals Papyrus and the Umbrella Plant (*Cyperus alternifolius*) grown in garden ponds and shade houses. *Cyperus rotundus* (Nut Grass) is a common weed of lawns and damp places.

The Cyperaceae native to Western Australia comprise some 22 genera and about 240 species. Eleven of these genera lack vernacular names, eight are called Rushes, and three are called Sedges.

The genera called Sedges of one kind or another are *Carex* (Sedges), *Lepidosperma* (Sword Sedges) and *Galinia* (Saw Sedges). The Coastal Sword Sedge (*Lepidosperma gladiatum*) is common in coastal dunes of our South-West coast. The Common Sword Sedge (*L. longitudinale*) is common in fens bordering fresh water lakes in South-Western Australia. The Spreading Sword Sedge (*L. effusum*) is another species commonly occurring in large

thickets in coastal fens and fringing coastal lakes and river estuaries. The Coast Saw Sedge (*Gahnia trifida*) commonly forms a belt at the landward edge of coastal saltmarshes. The foliage of these sedges has only to be grasped carelessly to appreciate their vernacular names.

The eight genera called Rushes are *Schoenus* (Bog Rushes), *Scirpus* (Club Rushes), *Cyperus* (Leaf Rushes), *Chorizandra* (Brittle Rushes), *Caustis* (Thick Twist Rush), *Eleocharis* (Spike Rush), *Cladium* and *Baumea* (Twig Rushes), *Fimbristylis* (Fringe Rushes).

The following are some notable examples of these Rushes. The Jointed Twig Rush (*Baumea articulatum*) inhabits local fresh-water marshes, its tall cylindrical leaves having a smooth shiny surface when fresh, but when cut and dried assuming a jointed appearance due to differential shrinkage of the internal pithy tissue. *Baumea juncea* (= *Cladium junceum* = *Machaerina juncea*) is the thin-leaved rush which occurs abundantly in the extensive fens of geologically old lakes in South-Western Australia. It is this species, along with other rushes and sedges, which is the source of 'cladium peat' marketed in Western Australia by the horticultural trade. The Knotted Club Rush (*Scirpus nodosus*) is a distinctive species inhabiting not only marshes but also mobile sand dunes along the coast where it effectively arrests drifting sand about its rhizomes and abundant fibrous root system.

REEDS

As already mentioned, the name Reed is given to several marsh plants with erect cane-like stems or culms coming from prostrate rooting stems or rhizomes. Two genera of Reeds, *Phragmites* and *Arundo* are tall perennial grasses (Poaceae = Gramineae) with flowering culms growing to several metres.

Phragmites has three cosmopolitan species, inhabiting marshy soils and even extending down shore into shallow water of rivers and lakes. The Common Reed (*Phragmites australis* = *P. communis*) (see Clayton, 1968) is wide-spread in Europe, Asia and America. In Western Australia this species has been recorded from Millstream on the Fortescue River, from the Moran River in the Kimberley, and from the town of Albany. These communities are regarded as introduced and naturalised ones. However the pan-tropical *P. karke* is native to northern Australia and has been collected from Prince Regent River, Ord River, Hann and Fortescue districts where it inhabits permanent fresh water pools of the seasonally flowing rivers and those of the gorges in otherwise arid country.

The other Reed-grass is the genus *Arundo* comprising 12 species distributed in tropical and temperate regions of the world. *Arundo donax* (Giant Reed or Danubian Reed) is a native of the Mediterranean Region, India and Madagascar. This plant was used for many purposes by the ancient peoples of Egypt, Palestine, Syria and the Sinai peninsula. The stem was fashioned into walking sticks, fishing-rods, measuring-rods and musical pipes, and is still so used today. Moldenke and Moldenke (1952) review the opinions of scholars on the references to this Reed in biblical writings.

Arundo prefers marshy habitats but is cultivated in many less well watered situations quite successfully. A variegated form of this reed is widely cultivated as an ornamental, such cultivars being common in Australian gardens and as escapees in marshes close to urban areas, as for example in the marshy places along the estuary of the Swan River.

This reed is often erroneously called a bamboo because of its superficial resemblance to some of the true bamboos. However, *Arundo* is of the Tribe Arundineae along with *Phragmites* and *Cortaderia* (Pampas Grass) whereas the bamboos are of the Tribe Bambusae.

The most notable reed in history is undoubtedly the Papyrus or Paper Reed. Papyrus grew abundantly along the banks of the Nile in ancient times, but is now nearly extinct in lower Egypt, although still abundant along the White Nile and in Nubia.

This plant was the source of the cellulose tissue of the pith of its flowering stems from which the ancient Egyptians made paper to record their history. The discovery of their writings or 'papyri' in Egyptian tombs and of papyri from the excavations of the ancient cities of Herculaneum and Pompeii attest the tremendous importance of the Papyrus plant in ancient civilisations about the Mediterranean (Moldenke and Moldenke, 1952).

The ancient Egyptians and the Phoenicians also built reed-boats from Papyrus, both small craft for commuting on rivers and large seagoing, sailing craft which enabled them to navigate the Mediterranean and the north-western coast of Africa. The Phoenicians are known to have sailed in such craft down the Red Sea and around Africa, returning through the Straits of Gibraltar into the Mediterranean.

Heyerdahl (1971) in his book, *The Ra Expeditions*, showed, by his building of two papyrus boats in Egypt and navigating them by sail and drift across the Atlantic from Morocco to the Barbados off South America, how ancient peoples of the Mediterranean could have reached the New World. Heyerdahl's thesis is, of course, because of the striking similarities between the many cultural features of the ancient civilisations of Asia Minor, North Africa and South America, that ancient peoples of the Mediterranean reached the east coast of South America by reed-boats drifting on the Canary and North Equatorial sea currents.

The coining of vernaculars for plants would seem to be a dying art. Perhaps there is little need for it amongst adult wildflower enthusiasts who soon become fluent in botanical nomenclature with the aid of the many publications available to them. However, common names of native plants are still popular with many adults and particularly amongst children, just as the vernaculars of exotic garden plants are.

The use of the vernacular also helps laymen and botanists alike to identify a plant community, such as a Sedge fen or a Reed marsh, by evoking a sense of scene, as was the case when Keats wrote

O what can ail thee, knight-at-arms,
Alone and palely loitering?
The sedge has wither'd from the lake,
And no birds sing.

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NOTES ON THE TUART TREE (*EUCALYPTUS GOMPHOCEPHALA*) IN THE PERTH AREA.

By J. E. D. FOX* and S. J. CURRY**

INTRODUCTION

C. P. Brown of Wannanup wrote to *The West Australian* in 1978 (Letters, 24 August 1978):—

As a ratepayer and resident of Mandurah, I am becoming increasingly concerned at the destruction of the surrounding bushlands by real estate developers. If commonsense prevailed, roads could be constructed through bush and the clearing of each block left to the discretion of the buyer. Even the lopping of the bigger gum trees would be preferable to their complete destruction. It seems to me that stupidity and greed are mainly responsible for the diminishing flora and fauna and subsequently, the quality of life.

He was, of course, referring to the tuart, the big gum of Mandurah. It is not only development *per se* which leads to the loss of trees in the urban landscape. Any road or other opening alters the environment and exposes trees to more sun, more wind and a greater edge effect than in the natural condition in which trees have developed. In this paper we give an account of the tuart tree and some of the environmental influences affecting it in the metropolitan area, with particular reference to the effects of insects and of fire on trees at three locations near Perth examined in May 1978.

DESCRIPTION OF TUART

The timber of tuart is pale yellow, very hard and dense with a strong interlocked grain (Gardner, 1952) and close textured. It is one of the heaviest and strongest of Australian timbers with moderate durability; its density is 990-1060 kg m³ (Hall *et al.*, 1975). In the State's early history tuart was valued for its toughness. It was used for keelsons, stern posts,

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